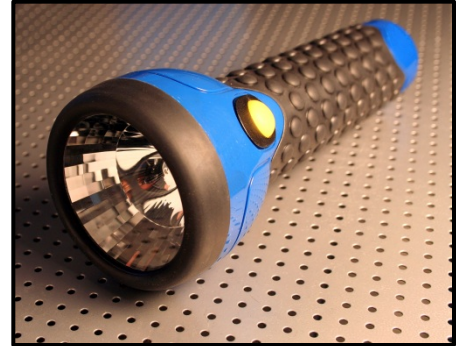




Name: \_\_\_\_\_ Date: \_\_\_\_\_ Per: \_\_\_\_\_

# READING SCIENCE

## Flashlights

*(Lexile 710L)*

- 1 A flashlight is a portable, battery-operated device which makes light. Most hand-held flashlights have one or more batteries inside them. There is a switch between the batteries and the bulb. The switch controls the flow of electricity between the batteries and the bulb.
- 2 Flashlights have multiple uses. We use them during emergencies such as power outages or when our car breaks down. Our parents may use them while searching through the attic or a dark closet. You may have used one on a camping trip. Everyone has used a flashlight at one time or another. When we do, energy is transformed.
- 3 Energy is the ability to do work or cause a change. The Law of Conservation of Energy tells us that energy cannot be created or destroyed. It can, however, be transformed from one form to another. There are many different forms of energy. We will find chemical energy, electrical energy, and light energy in a flashlight.
- 4 How does energy change when we use a flashlight? First, the batteries store chemical energy. This is energy that is released during a chemical change. When chemical bonds are formed or broken, electrons are rearranged. This movement of electrons makes chemical energy. Batteries can convert stored chemical energy into electrical energy.
- 5 Electrical energy is the energy of electricity. Electricity is the movement of electrical charges through a conductor. Electricity moves through wires to places where it is needed. Then it can be converted into other forms of energy. In a flashlight, the electrical energy becomes light energy and thermal energy in the bulb.
- 6 Light energy moves by wave motion. That is, light is a form of energy caused by electromagnetic waves. Light energy allows us to see. Objects are only visible when they reflect light into our eyes. Our eyes convert the light energy back to electrical energy as a nerve signal. Our brain can convert that into an image we see.



# READING SCIENCE

- 7 Thermal energy is the energy of heat. Energy transforms from one form into another. A small amount, however, is often converted into thermal energy as a by-product. The bulb transforms electrical energy into both light energy and thermal energy. It makes more light than heat though. This is why the light bulb starts to feel warm after the flashlight has been on.
- 8 The last time you looked at a flashlight, it probably looked pretty simple. You flip the switch. Light comes out. Now you know that there is a lot more happening. Energy must first be converted from chemical energy in the batteries into electrical energy. This energy moves to the bulb to be transformed into the light you see.



# READING SCIENCE

- 1 Which of the following sentences are the best short summary for a flashlight?
- A A flashlight has many uses.
  - B A flashlight is able to create light energy, allowing us to see in the dark.
  - C A flashlight is a necessary tool for every household.
  - D A flashlight is a portable, battery-operated device which makes light.
- 
- 2 Much like a battery, wood contains stored energy. What energy transformations occur when wood is burned?
- A Thermal energy transforms to chemical energy and light energy.
  - B Biological energy transforms to electrical energy and light energy.
  - C Chemical energy transforms to thermal energy and light energy.
  - D Chemical energy transforms to thermal energy and heat energy.
- 
- 3 In Paragraph 5, what does **converted** mean?
- A Transferred
  - B Changed
  - C Transported
  - D Current



# READING SCIENCE

- 4** Identify the correct order for the energy transformations in a flashlight.
- A** Electrical to chemical to thermal
  - B** Light to electrical to chemical
  - C** Thermal to electrical to light
  - D** Chemical to electrical to light
- 
- 5** In an ideal situation where no heat energy is produced, what is the relationship between the chemical energy provided by the battery and the electrical energy produced according to the Law of Conservation of Energy?
- A** The chemical energy should be less than the electrical energy.
  - B** The chemical energy should be equal to the electrical energy.
  - C** The chemical energy should be more than the electrical energy.
  - D** none of the above

